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ABSTRACT

Four different college classes at a midwestern university were surveyed in both their freshman and their senior years, with data collected from 2,069 students (a 72% response rate). A student involvement questionnaire (IQ) was used to demonstrate the merit of studying student involvement in a value-added outcomes assessment program by defining components of involvement and investigating change from the freshman to the senior year. Repeated measures multivariate analysis of variance (MANOVA) was performed on factors of academic involvement, social involvement, and goal commitment and satisfaction to determine whether significant change from the freshman to the senior year occurred, controlling for students' personal characteristics. Increases in involvement were found in extracurricular activities, satisfaction and commitment, academic contacts with faculty, and academic activities. Decreases in involvement were found in social peer activities. Using student involvement as a value-added outcome in educational assessment is discussed. Contains 39 references. (GLR)

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Using Student Involvement in Value-Added Outcomes Assessment

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This paper was presented at the Thirtieth Annual Forum of the Association for Institutional Research held at The Galt House, Louisville, Kentucky, May 13-16, 1990. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

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Abstract

This paper discusses using student involvement in assessing educational outcomes. Studying student involvement adds an element of the student development model to value-added outcomes assessment. Student involvement changes during college, as students change academically. Repeated measures MANOVA's were performed on measures of academic involvement, social involvement, and goal commitment and satisfaction to determine whether significant change from the freshman to the senior year occurred, controlling for students' personal characteristics. Increases in involvement were found in extracurricular activities, satisfaction and commitment, academic contacts with faculty, and academic activities. Decreases in involvement were found in social peer activities. Using student involvement as a value-added outcome in educational assessment is discussed.

Using Student Involvement in Value-Added Outcomes Assessment

One response of colleges and universities to the increasing demand for accountability is to demonstrate accountability through student outcomes assessment (Ewell, 1987). A variety of assessment approaches exist, and different universities assess different outcomes. Although most assessment activity focuses on academic assessment, a connection is needed between demonstrating what students learn and how they live and behave to interpret information about student outcomes. A comprehensive assessment program requires considering both the academic and non-academic characteristics of students as they progress through college. Specifically, measures of student involvement are needed (Astin, 1985). Student involvement theories provide important information to be used along with value-added academic outcomes assessment. In fact, measures of student involvement can be used as value-added assessment tools (Pace, 1984a, 1984b).

The Study Group on the Conditions of Excellence in American Higher Education (1984) recommended students to become more involved in their education. They recommended students to take advantage of available educational programs that are available, such as developing relationships with faculty and getting involved in extracurricular activities. They recommended colleges and universities to increase student involvement to improve the impact of a college education on students. The purpose of these recommendations was to help students better realize the positive

effects of higher education.

Although the influence of student involvement on student development and student attrition is assumed to exist during college (Astin, 1984, 1985; Tinto, 1975), little study has been done of involvement as a valuable outcome itself, especially as a value-added outcome. Does student involvement change during college? How does it change? By studying student involvement as an outcome, rather than as a means to studying persistence, a better understanding of the complex nature of the impact of a university education on students may emerge (Ory & Braskamp, 1988). Colleges and universities may be able to demonstrate accountability through a more comprehensive approach to outcomes assessment. Study of the roles of involvement in out-of-classroom programs and services, involvement in academics, and involvement as a result of student satisfaction are needed in order to help educators better understand the full impact of college (Webb, 1987).

Efforts toward nonacademic assessment of the effects of college are not new. Indeed, several comprehensive summaries of such studies over the last several decades exist (e.g., Feldman & Newcomb, 1969; Lenning, Munday, Johnson, Vander Well, & Brue, 1974a, 1974b; Pace, 1979). Most studies reviewed were conducted under the assumption that students change as a direct result of college. An extensive compilation by Feldman and Newcomb (1969) summarized the approaches and findings of many of these studies. Most of the studies of college effects focus on non-academic change, such as personal growth: changes in values and attitudes,

or personality change, aspirations, and self-identity.

Student involvement has been studied in terms of interpersonal relationships with peers and faculty. Many studies demonstrated the effects of interpersonal relationships on students' personal and academic development. One study concluded that peer interaction affected personal or social development, while student-faculty interaction affected intellectual outcomes, academic achievement, degree aspiration, and satisfaction with education (Endo & Harpel, 1983). Another study revealed that informal interaction with faculty presented greater potential for academic development through impressions of the academic program and the general academic life of the campus (Pascarella & Terenzini, 1976). In a review of the literature on faculty-student interaction, Pascarella (1980) concluded that non-classroom contact between faculty and students positively affected student satisfaction, achievement, and persistence, even after controlling for entering characteristics of students. This finding is especially true for contacts of an intellectual or career development nature (Endo & Harpel, 1981; Pascarella & Terenzini, 1978).

Much of the recent student involvement research is based on Tinto's (1975) model of attrition. Tinto theorized that attrition is a longitudinal process. Students' goal and institutional commitments, which are influenced by their background characteristics, influence the ways they become involved in the academic and social life of the institution, resulting in

completion of a college degree. Students' academic and social integration further influence the students' commitments in ways which lead to persistence or withdrawal. "Other things being equal, the higher the degree of integration of the individual into the college systems, the greater will be his commitment to the specific institution and to the goal of college completion" (Tinto, 1975, p. 96).

Many studies support Tinto's (1975) model of involvement and student attrition (Pascarella & Chapman, 1983; Pascarella & Terenzini, 1978, 1980, 1983; Terenzini & Pascarella, 1977). Johnson (1980) used Tinto's (1975) conceptualization in studying student involvement differences between stayers and leavers. Significant differences existed between stayers and leavers in the frequency of academic and social activities in which they engaged. For example, stayers spent more time studying and they indicated greater social interaction on campus than leavers did. Johnson concluded that further study was needed in understanding the relationship between academic and social integration and between student involvement and academic outcomes.

Schriner (1983) used the same instrument from Johnson's (1980) study. He investigated change in academic integration, social integration, and satisfaction and commitment from the freshman to the senior year in a sample of persisters. He found significant change in all factors of academic integration, social integration, and goal and institutional commitment from the freshman to the senior year, yet he did not control for students' entering or

personal characteristics.

One study attempted to relate students' academic and social integration to self-perceived academic growth. One study found no relationship between social integration and academic development in the freshman and sophomore years, but there was a significant relationship in the junior and senior years, even though social integration influence was found to increase and academic integration was found to decrease in the junior and senior years (Terenzini & Wright, 1987a). They concluded that Tinto's (1975) model of attrition might be adapted to studying other outcomes because students' social and academic integration were related to self-reported personal and academic growth. More recently, Tinto (1988) suggested greater study of social and academic involvement as distinct from student retention.

Differences between males and females in patterns of student involvement have been found. Pace (1990) found slight differences between males and females. Females scored slightly higher than males on academic and social activities ratings. Anderson (1988) found that change in goal commitment was stronger among women. Stage (1989) found differences between males and females in a study of reciprocal effects of academic and social integration.

Value-added assessment of educational outcomes considers the differences between students when they enter college and when they leave (Osigweh, 1986). Within a value-added framework, student outcomes represent "any change or consequence occurring as a result of enrollment in a particular educational institution and

involvement in its programs" (Ewell, 1983, p. 11).

Change is crucial to the value-added approach. "The search for improvement, the margin of effectiveness, or for the 'positive differences' presupposes the existence of change: change which has taken place during the life of the [educational] program" (Osigweh, 1986, p. 29). Assessing change requires at least two measurements, one at entry and one at exit, be made with the same or similar instruments and techniques. The entry measurement collects information about differing input characteristics and conditions so their influence can be identified and controlled in the analysis. Otherwise, changes that appear to occur in students over time as a result of the educational program may be due to differences among students themselves (Ewell, 1983). While some studies have attempted to measure similar variables at several points during the college experience (e.g., Terenzini & Wright, 1987a, 1987b), it is commonly practiced to take only two measurements--one at the freshman year and one at the senior year (Steele, 1988).

A discussion of value-added assessment by Pascarella (1986) concluded that value-added analysis is an appropriate approach to assessing institutional impact on students, or the net effects of college, as long as appropriate methodological control is employed. Hanson (1988) discussed value-added assessment as separate from student outcomes assessment; value-added assessment is conceptually and methodologically demanding, but the results of value-added assessment can be more revealing.

Student involvement can be used as a criterion in value-added

assessment, since involvement is an important cause and correlate of total student development or the net effect of college (Pascarella, 1986; Smart & McLaughlin, 1986). One study demonstrated that the quality of student involvement in campus activities was significantly related to self-perceived intellectual and social growth during the freshman year. Intellectual growth was related to the quality of academic effort, while social growth was related to social/group effort. There was a direct effect of quality of effort on perceived educational growth when controlling for pre-college characteristics (Smart & McLaughlin, 1986).

In a cross-sectional study of involvement using the College Student Experiences Questionnaire, Pace (1990) found that significant change occurred from the freshman to the senior year in students' goals. Slight change occurred from the freshman to the senior year (and from year to year) in scores for academic and social activities.

The purpose of the present study was to demonstrate the merit of studying student involvement in a value-added outcomes assessment program by defining components of involvement and investigating change from the freshman to the senior year. The goals of this study were the following: to study student involvement, conceptualized by Tinto (1975) to determine if it is tenable in value-added student outcomes assessment beyond retention; to investigate change in student involvement outcomes from the freshman to the senior year in undergraduates; and to conceptualize involvement as an outcome itself.

Using involvement theory in this way expands its use and conceptualization, as described by Tinto (1975). Tinto argued that involvement was important in a student's decision to persist or withdraw from the institution. Investigating whether involvement theory is tenable beyond this conceptualization will provide information about its merit as a value-added outcome.

Method

Subjects

Four different freshman classes were surveyed. Freshmen at a midwestern university were surveyed during the years 1982-1983, 1983-1984, 1984-1985, and 1985-1986. All freshmen living in the residence halls on campus (about 2,700 students each year, or 90 percent of all freshmen on campus) were given a student involvement questionnaire (SIQ) during spring quarter. The overall response rate was 66 percent for the four freshman classes. Responding freshmen were representative in sex, race, entering academic ability, and academic college in which they enrolled.

Freshmen from the four academic years were tracked to their senior year four years later. Students who had not left the university were identified and surveyed again, using an SIQ identical to the one they completed as freshmen. Only seniors who participated as freshmen were selected. Seniors in the years 1985-1986, 1986-1987, 1987-1988, and 1988-1989 were surveyed. The overall response rate was 72 percent. This study presents data from 2,069 students from the four academic years combined.

Student Involvement Questionnaire (SIQ)

The SIQ was designed to measure three aspects of student involvement: academic involvement, social involvement and activities, and student commitment and satisfaction. It collects information about the incidence and frequency of participation in activities, frequency of contact with faculty, frequency of contacts with other students, and satisfaction with the university and commitment to graduating. The questionnaire was adapted and shortened from a more extensive version that was used in a University of Michigan Project CHOICE (Center for Helping Organizations Improve Choice in Education) study, which examined the relationship between academic and social integration and goal commitment and student attrition at 13 colleges and universities in the midwestern United States (Johnson, 1980).

Data Analysis

A data reduction technique was employed to reduce the number of dependent variables in the analysis. Principal components analyses were conducted to determine overall constructs from combinations of variables and reduce the number of dependent variables to a smaller number of dimensions related to social involvement, academic involvement, and satisfaction. This method is similar to the one used by Terenzini and Pascarella (1977).

Six constructs were created by summing items within constructs identified in the principal components analysis. The first construct included items that asked about the number of activities and time spent in extracurricular activities (Extracurricular

Activities). The second construct included items that asked about the importance of graduating in general and from the university (Importance of Graduating). The third construct included items that asked about the number of conversations with faculty and advisors (Conversations with Faculty). The fourth construct included items that asked about the number of social outings with peers (Social Peer Activities). The fifth construct included items that asked about satisfaction with making the right choice in attending the university and satisfaction with faculty (Satisfaction). The sixth construct included items that asked about the number of personal academic and cultural activities (Personal Academic Activities). These six constructs represent measures of social involvement, academic involvement, and goal commitment and satisfaction. In the interpretation of results, combinations of dependent variables into the six constructs are nonequivalent due to the different scales used.

Repeated measures multivariate analysis of variance (MANOVA), was performed to determine whether a significant change from the freshman to the senior year occurred, controlling for the gender and entering academic ability of the respondents. Entering academic ability was measured as high school rank divided into quartiles. This repeated measures design was a one-within, two-between design. The overall familywise alpha was set at 0.05; individual significance tests for univariate tests were conducted "per family" within each effect, according to Kirk (1968). The "per family" alpha for univariate tests was .008.

Results

Because no significant three-way interactions were found, individual cell means are not reported. The main effects means and two-way interaction means for dependent variable constructs are presented in Table 1. Table 2 contains the MANOVA source table showing the overall multivariate results and follow-up univariate tests for each dependent variable construct. MANOVA results are divided into two sections. The first section shows the between-subjects results. The second section shows the within-subjects results for freshman/senior status (GRADE), gender (SEX), and entering academic ability (HSRANK).

Results of the overall multivariate between-subjects MANOVA's revealed no significant two-way interaction between gender and entering academic ability. However, there were significant multivariate main effect differences within each factor ($p < .05$). The univariate tests revealed significant differences between males and females in extracurricular activities, conversations with faculty, satisfaction, and personal academic activities ($p < .008$). Males reported participating in more extracurricular activities than females, and females reported more conversations with faculty, greater satisfaction, and more personal academic activities than males. No significant differences were found in the importance of graduating and social peer activities.

Significant univariate differences existed between the four quartiles of high school rank for social peer activities ($p < .008$). Tukey post-hoc tests revealed that students in the higher

Table 1. Main Effects and First-Order Interaction Means for Transformed Involvement Variables

	Main Effect: Freshman/Senior Status			
	FRESHMEN		SENIORS	
TOTAL:	Mean	S.D.	Mean	S.D.
Extracurricular Activities	16.1	30.4	23.0	36.5
Importance of Graduating	3.5	1.3	2.6	.9
Conversations with Faculty	4.2	7.9	9.6	13.5
Social Peer Activities	18.9	10.4	16.8	9.9
Satisfaction	4.1	1.4	3.9	1.4
Personal Academic Activities	6.0	7.7	8.6	9.9

	Interaction Effect: Freshman/Senior Status by Gender			
	FRESHMEN		SENIORS	
SEX:	Male	Female	Male	Female
Extracurricular Activities	19.0	14.0	24.8	21.8
Importance of Graduating	3.5	3.5	2.7	2.5
Conversations with Faculty	3.7	4.6	8.7	10.2
Social Peer Activities	18.6	19.1	17.2	16.5
Satisfaction	4.2	4.0	4.1	3.8
Personal Academic Activities	5.2	6.5	7.8	9.1

	Interaction Effect: Freshman/Senior Status by Entering Academic Ability							
	FRESHMEN				SENIORS			
HS RANK:	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Extracurricular Activities	19.8	14.0	16.5	14.9	23.5	23.6	25.3	22.2
Importance of Graduating	3.6	3.5	3.5	3.4	2.6	2.6	2.6	2.5
Conversations with Faculty	4.5	3.9	3.8	5.1	9.2	9.7	9.4	10.4
Social Peer Activities	21.1	20.9	19.1	15.9	18.8	17.2	16.2	15.2
Satisfaction	4.1	4.2	4.0	3.9	4.0	3.9	3.9	3.8
Personal Academic Activities	5.4	5.7	5.7	6.7	8.1	8.4	8.6	9.0

Table 2. MANOVA Source Table for Transformed Involvement Variables

Source of Variation	MULTIVARIATE			UNIVARIATE						
BETWEEN SUBJECTS:	Wilks' Lambda	df	F (prob.)	df	EXTRACUR*	IMPORT*	FACULTY*	SOCIAL*	SATISFAC*	PER ACTIV*
					F (probability)					
SEX	.98	6, 2056	8.61 (.00)	1, 2061	11.17 (.00)	1.45 (.23)	8.17 (.00)	0.49 (.48)	16.40 (.00)	15.88 (.00)
HSRANK	.95	18, 5816	6.54 (.00)	3, 2061	1.74 (.16)	1.92 (.13)	1.32 (.27)	29.39 (.00)	1.76 (.15)	0.84 (.47)
SEX x HSRANK	.99	18, 5816	0.93 (.55)	3, 2061	2.02 (.11)	0.43 (.73)	0.20 (.90)	0.07 (.98)	2.26 (.08)	0.83 (.48)
	MULTIVARIATE			UNIVARIATE						
WITHIN SUBJECTS:	Wilks' Lambda	df	F (prob.)	df	EXTRACUR*	IMPORT*	FACULTY*	SOCIAL*	SATISFAC*	PER ACTIV*
					F (probability)					
GRADE	.63	6, 2056	204.29 (.00)	1, 2061	58.93 (.00)	736.07 (.00)	217.70(.00)	60.69 (.00)	14.41 (.00)	163.84 (.00)
GRADE x SEX	.99	6, 2056	2.57 (.02)	1, 2061	0.24 (.63)	8.72 (.00)	0.87 (.35)	4.57 (.03)	0.71 (.40)	0.01 (.94)
GRADE x HSRANK	.99	18, 5816	1.53 (.07)	3, 2061	1.83 (.14)	0.75 (.52)	0.42 (.74)	4.87 (.00)	0.56 (.64)	0.09 (.96)
GRADE x SEX x HSRANK	.99	18, 5816	0.74 (.77)	3, 2061	1.37 (.25)	0.73 (.54)	0.54 (.65)	0.17 (.92)	0.70 (.55)	0.72 (.54)

*EXTRACUR = extracurricular activities; IMPORT = importance of graduating; FACULTY = conversations with faculty; SOCIAL = social peer activities; SATISFAC = satisfaction; PER ACTIV = personal academic activities.

quartiles reported fewer social peer activities than students in the lower quartiles, as freshmen and as seniors. Students in the lower quartiles reported more social peer activities than students in the higher quartiles, as freshmen and as seniors.

Results of the overall within-subjects MANOVA's revealed no significant three-way interaction between freshman/senior status, gender, and high school rank. However, there was a significant multivariate two-way interaction between freshman/senior status and gender ($p < .05$), and a significant multivariate main effect difference between freshmen and seniors ($p < .05$).

In the two-way freshman/senior status by gender interaction, the follow-up univariate tests revealed a significant univariate result for importance of graduating ($p < .008$). Among freshmen there was no difference between males and females in the mean importance of graduating, but among seniors the mean importance of graduating for females was smaller (more important) than for males.

There was a significant multivariate main effect result for freshman/senior status ($p < .05$). Significant univariate differences existed for all six dependent variables ($p < .008$). The number of extracurricular activities, conversations with faculty, and personal academic activities increased from the freshman to the senior year. Mean ratings of importance of graduating and satisfaction decreased (improved) from the freshman to the senior year. The number of social contacts with peers decreased from the freshman to the senior year.

One significant univariate two-way interaction occurred where

there was a non-significant multivariate two-way interaction. There was a non-significant multivariate freshman/senior status by entering academic ability interaction but a significant univariate interaction for social peer activities ($p < .008$). Students in the lower quartiles decreased the most from the freshman to the senior year in the number of social peer activities. Students' mean social peer contacts in the second quartile decreased the most from the freshman to the senior year (20.9 to 16.2). The decrease in social peer activities from the freshman to the senior year means for students in the top quartile was the smallest difference among the quartiles (15.9 to 15.2).

Similar MANOVA's were conducted on individual, non-transformed dependent variables which yielded identical results to those presented above.

Discussion

The SIQ was developed using parts of Tinto's (1975) attrition model to differentiate between students who persist to graduation and students who leave the institution; then it was adapted to measure change from the freshman to the senior year (Schriner, 1983). This study dealt with a sample of students who not only persisted beyond the freshman year but completed their education in four years. It attempted to expand the use of social and academic involvement and commitment variables beyond attrition/retention to the study of educational outcomes.

The results of this study support the idea that student involvement, in terms of academic involvement, social involvement,

and goal commitment and satisfaction, is tenable in value-added student outcomes assessment for persisters. Change from the freshman to the senior year was found in all six constructs: participation in extracurricular activities, social peer activities, personal academic activities, conversations with faculty, importance of graduating, and satisfaction. Significant change occurred in combination and separately. Change in these constructs is directly related to the college experience, and each construct represents a valuable educational outcome.

The reported increase from the freshman to the senior year in extracurricular activities, conversations with faculty, personal academic activities, ratings of importance of graduating and satisfaction, and the decrease from the freshman to the senior year in social peer activities is consistent with findings from other studies (e.g., Terenzini & Wright, 1987a, 1987b). This change represents an important overall pattern of activity to consider in assessing educational outcomes. Yet different patterns of involvement were found to exist between males and females, and between students of different levels of entering academic ability. Disaggregating assessment results into subgroups reveals that within a single institution, outcomes do not occur universally. In value-added outcomes assessment the overall pattern of change must be studied with an approach that controls for systematic bias and student differences.

A lack of significant interactions between student characteristics (gender and entering academic ability), and between

student characteristics and freshman/senior status made these results more interpretable for assessment purposes. Yet one significant multivariate interaction and two significant univariate interactions were found. Significant multivariate differences between males and females and between different levels of entering academic ability were found. These differences suggest different patterns of involvement among different groups of students and different outcomes for different groups of students.

It is apparent that involvement is a complex phenomenon that can be understood universally and specifically. Universally, involving students benefits them by helping them take advantage of what a college or university has to offer. However, simply encouraging all students to get involved (for retention or educational enrichment) is not sufficient for meeting all students' needs. The results of this study support this idea. Students have diverse involvement needs which result in different outcomes. In this study students of different entering academic ability reported differences in social peer activities. Males and females changed differently in their reported importance of graduation. These differences represent different involvement needs and different value-added outcomes among groups of students.

This exploratory study demonstrated a basic approach to involvement assessment, and it has made available the possibility for further research on involvement outcomes. This investigation could be continued to provide further information about how student involvement changes over certain intervals during four years of

college, not just from the freshman to the senior year. It could be continued to provide further information about how involvement is reported by different subgroups, how it is related to academic outcomes, and how important it is to students as an educational outcome. Further study of the relationship between involvement and success in college for different groups of students is needed.

In the context of educational outcomes, these research questions are institution-specific questions. Patterns of involvement vary from institution to institution. Many different approaches to studying student involvement exist because different patterns of involvement are valued on different campuses. Involvement, in general, is beneficial to students. Yet from campus to campus and from student to student involvement needs to be conceptualized differently.

Student involvement is a complex phenomenon which needs to be understood through studies which control for systematic bias and differences between students. Effective outcomes research requires complex designs that are difficult to communicate in the practical use of outcomes assessment results (Ewell, 1988; Terenzini, 1989), particularly value-added designs (Hanson, 1988). One resolution of this problem is to study value-added involvement outcomes with appropriate research designs to establish universal approaches that can be used inter-institutionally. These designs then can be adapted at individual campuses for assessment and planning needs, using institution-specific measures of involvement. Indeed, this is one of the roles of institutional researchers.

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